



Three Phase Bridge

Reverse Voltage - 800 to 1600 Volts
Forward Current - 200 Amperes

Features

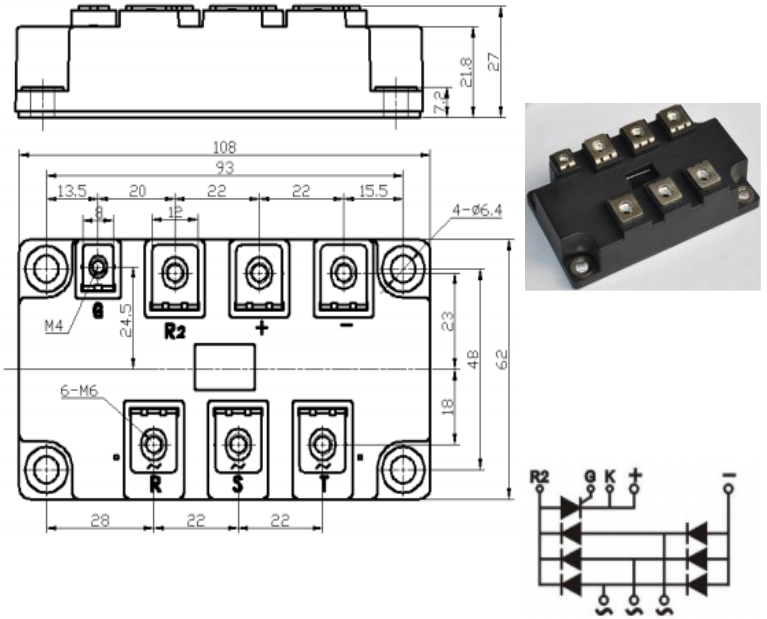
- Blocking voltage: 800 to 1600v
- Three Phase Bridge and a Thyristor
- Isolated Module package

Applications

- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply
- UL E304417 approved

- Note: Products with logo  or  are made by HY Electronic (Cayman) Limited.

M51B



Package Outline Dimensions in Millimeters

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

TYPE	VRRM	VRSM
MDST200-08	800V	900V
MDST200-12	1200V	1300V
MDST200-16	1600V	1700V

Characteristics	Symbol	Item	Values	Unit	
Three phase, full wave Tc=100°C	ID	Output Current(D.C.)	200	A	
t=10mS Tvj =45°C	IFSM	Surge forward current	2240	A	
t=10mS Tvj =45°C	I ² t	Circuit Fusing Consideration	25080	A ² s	
a.c.50HZ;r.m.s.;1min	Visol	Isolation Breakdown Voltage(R.M.S)	3000	V	
	Tvj	Operating Junction Temperature	-40 to + 150	°C	
	Tstg	Storage Temperature	-40 to + 125		
To terminals(M4)	Mt	Mounting Torque	2±15%	Nm	
To terminals(M6)			5±15%		
To heatsink(M6)	Ms		5±15%	Nm	
	Weight	Module (Approximately)	360	g	
Junction to Case	Rth(j-c)	Thermal Impedance, max	0.12	°C/W	
Case to Heatsink	Rth(c-s)	Thermal Impedance, max	0.10	°C/W	
T=25°C IF=200A	VFM	Forward Voltage Drop, max	Min	Typ	Max
			/	/	1.45
Tvj =25°C,VRD=VRRM	IRD	Repetitive Peak Reverse Current, max	/	/	0.1
Tvj =150°C,VRD=VRRM			/	/	9

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Characteristics	Symbol	Item	Values	Unit		
$T_c=90^\circ\text{C}$, Single Phase half wave 180° conduction	I_{TAV}	Average On-State Current	200	A		
$T_{vj}=45^\circ\text{C}$ $t=10\text{ms}$ (50Hz),, sine $V_R=0$	I_{TSM}	Surge On-State Current	1900	A		
	I^2t	Circuit Fusing Consideration	18050	A^2S		
a.c.50HZ;r.m.s.;1min	Visol	Isolation Breakdown Voltage(R.M.S)	3000	V		
	T_{vj}	Operating Junction Temperature	-40 to + 150	$^\circ\text{C}$		
	T_{stg}	Storage Temperature	-40 to + 150	$^\circ\text{C}$		
$T_{vj}=T_{vjM}$, $V_D=1/2V_{DRM}$, $I_G=100\text{mA}$ $d_i/dt=0.1\text{A/us}$	d_i/dt	Critical Rate of Rise of On-State Current	150	A/us		
$T_{vj}=T_{vjM}$, $V_D=2/3V_{DRM}$, linear voltage rise	dv/dt	Critical Rate of Rise of Off-State Voltage, min	500	V/us		
Junction to Case	$R_{th(j-c)}$	Thermal Impedance, max	0.14	$^\circ\text{C/W}$		
Case to Heatsink	$R_{th(c-s)}$	Thermal Impedance, max	0.10	$^\circ\text{C/W}$		
$T=25^\circ\text{C}$ $I_T=200\text{A}$	V_{TM}	Peak On-State Voltage, max.	Min.	Typ	Max	
			/	/	1.65	V
$T_{vj}=T_{vjM}$, $V_R=V_{RRM}$, $V_D=V_{DRM}$	I_{RRM}/I_{DRM}	Repetitive Peak Reverse Current, max /Repetitive Peak Off-State Current,max	/	/	30	mA
$T_{vj}=T_{vjM}$	V_{TO}	Threshold voltage	/	/	0.9	V
	R_t	Slope resistance, max	/	/	2	$\text{m}\Omega$
$T_{vj}=25^\circ\text{C}$, $V_D=6\text{V}$	V_{GT}	Gate Trigger Voltage, max	/	/	3	V
$T_{vj}=25^\circ\text{C}$, $V_D=6\text{V}$	I_{GT}	Gate Trigger current, max	/	/	150	mA
$T_{vj}=125^\circ\text{C}$, $V_D=2/3V_{DRM}$	V_{GD}	Required DC gate voltage , max	/	/	0.25	V
$T_{vj}=125^\circ\text{C}$, $V_D=2/3V_{DRM}$	I_{GD}	Required DC gate current , max	/	/	6	mA
$T_{vj}=25^\circ\text{C}$, $R_G=33\Omega$	I_L	Latching current, max	/	300	600	mA
$T_{vj}=25^\circ\text{C}$, $V_D=6\text{V}$	I_H	Holding current, max	/	150	250	mA
$T_{vj}=25^\circ\text{C}$	t_{gd}	Gate controlled delay time	1			μs
$T_{vj}=T_{vjM}$	t_q	Circuit commutated turn-off time	100			μs

Performance Curves

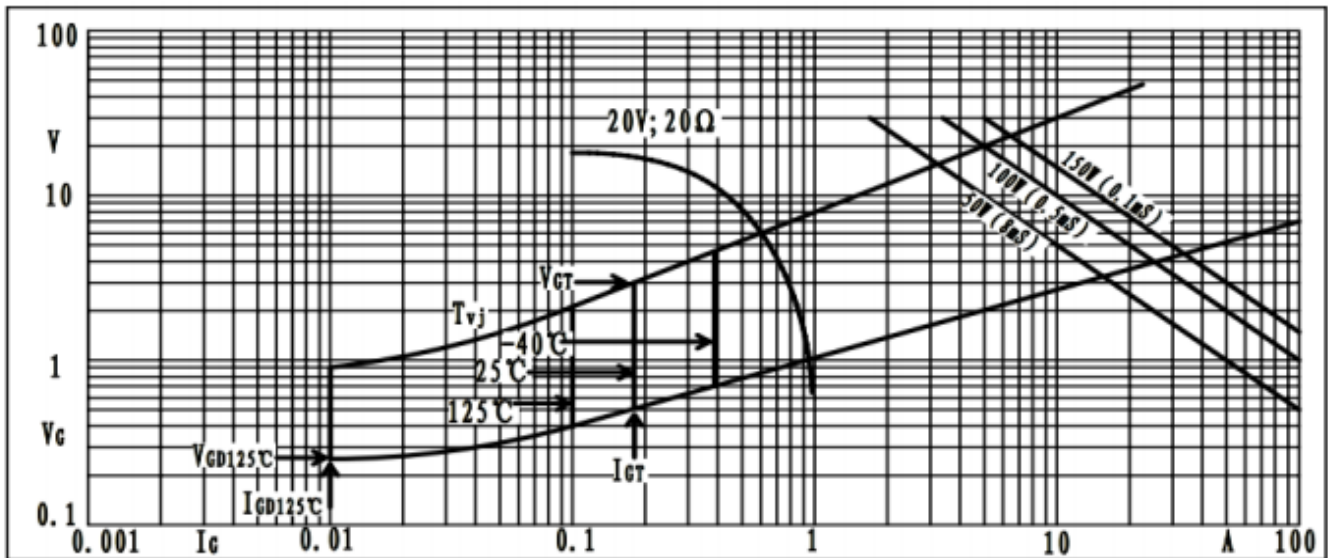


Fig1. Gate trigger characteristics

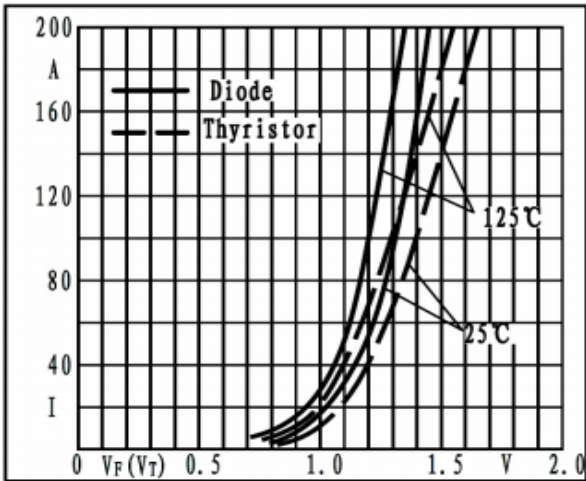


Fig2. Forward characteristics

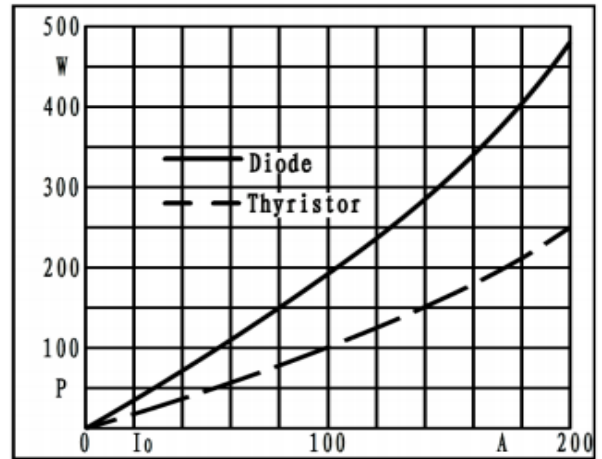


Fig3. Power dissipation

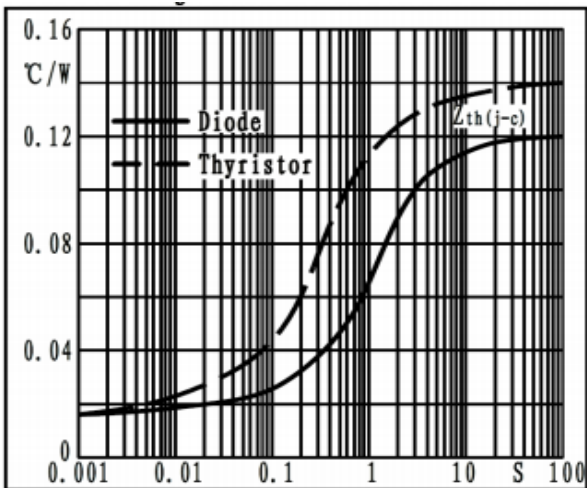


Fig4. Transient thermal impedance

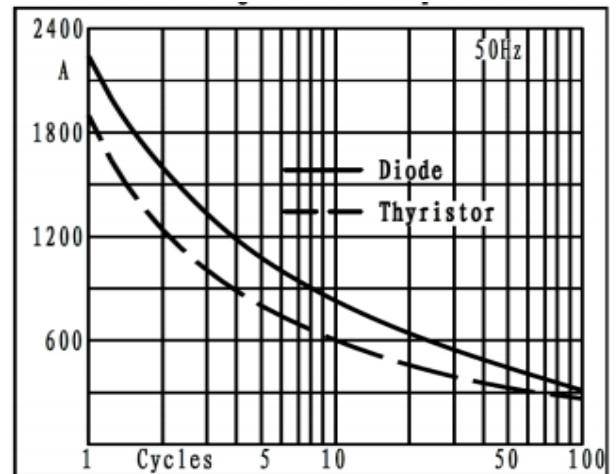


Fig5. Max non-repetitive forward surge current

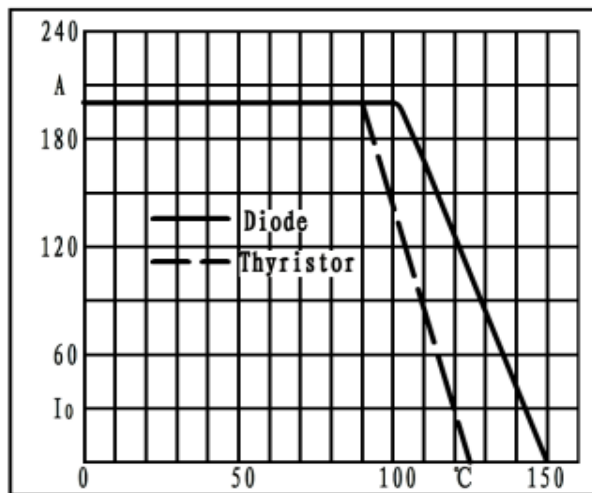


Fig6. Forward current derating curve

The curve above is for reference only.

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